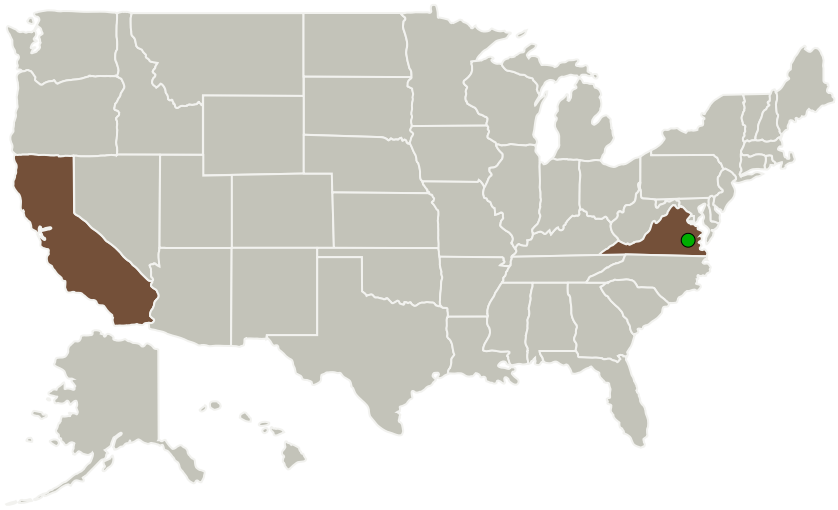
Prediction of Unsteady Transonic Aerodynamics, Phase I

Completed Technology Project (2011 - 2011)

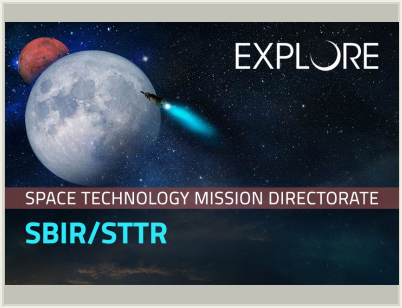
Project Introduction

An accurate prediction of aero-elastic effects depends on an accurate prediction of the unsteady aerodynamic forces. Perhaps the most difficult speed regime is transonic where the motion of the shock wave and its interaction with the boundary layer are dominant factors. In spite of over 40 years research into the computation of unsteady transonic aerodynamics there still appear to be areas where available technology is inadequate. A research axiom is that if a particular viewpoint fails to resolve an issue then the problem should be viewed differently. The research proposed here is to re-examine some issues in unsteady transonic aerodynamics using some recent theoretical developments. All aspects of unsteady transonic flow, including limit cycles and control strategies will be considered.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
AYCN LLC	Lead Organization	Industry	Los Altos, California
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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Primary U.S. Work Locations	
California	Virginia

Project Transitions

February 2011: Project Start

August 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138423)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

AYCN LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

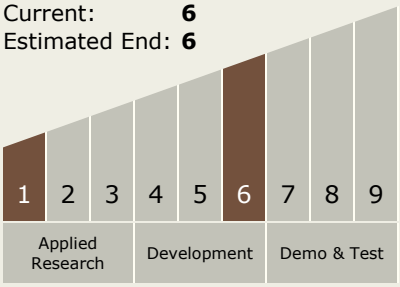
Carlos Torrez

Principal Investigator:

David Nixon

Technology Maturity (TRL)

Start: **1**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.3 Aeroelasticity

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System